IN THE CLAIMS

Please cancel claims 2, 3, 4, and 14, amend claims 1, 5, 7, 15, and 19 and add new claims 23-26 as follows:

1. (CURRENTLY AMENDED) A direct radiating array (DRA), comprising:

a plurality of elements, collectively defining a DRA main lobe nearest a DRA boresight and a set of grating lobes nearest the DRA main lobe[[,]];

wherein each of the grating lobes in the set of grating lobes is angularly displaced from the main lobe by a grating lobe angle that varies asymmetrically about the DRA main lobe[[,]];

wherein the plurality of elements comprises:

a first row of elements extending in a first direction, each element of the first row of elements is spaced apart from an adjacent element in the first row of elements by a distance V; and

a second row of elements, parallel to the first row of elements, the second row of elements offset from the first row of elements in the first direction by a stagger distance S, each element of the second row of elements is spaced apart from an adjacent element of the second row of elements by the distance V, and the second row of elements is spatially displaced from the first row of elements in a direction perpendicular to the first direction by a distance H; and

wherein the stagger distance $S \neq \frac{1}{2} V$.

2. (CANCELED)

3. (CANCELED)

4. (CANCELED)

5. (CURRENTLY AMENDED) The apparatus of claim [[4]] 1, wherein:

$H = V$; and

$S \cong 0.45V$.

6. (ORIGINAL) The apparatus of claim 5, wherein $H = V = 3.75\lambda$, wherein λ is a wavelength of a signal emanating from the DRA.

7. (CURRENTLY AMENDED) The apparatus of claim [[4]] 1, wherein:
the first direction is tilted from a North direction by a tilt angle between 0 and 90 degrees.

8. (ORIGINAL) The apparatus of claim 7, wherein:
the tilt angle is approximately equal to 14 degrees;

9. (PREVIOUSLY PRESENTED) The apparatus of claim 8, wherein:
$H = V$; and
$S \cong 0.496\ V$.

10. (ORIGINAL) The apparatus of claim 9, wherein $H = V \cong 3.89\lambda$, wherein λ is a wavelength of a signal emanating from the DRA.

11. (ORIGINAL) The apparatus of claim 7, wherein:
the tilt angle is approximately equal to 6 degrees; and
$\frac{H}{V} \neq 1$.

12. (ORIGINAL) The apparatus of claim 11, wherein $\frac{H}{V} \cong 1.525$.

13. (ORIGINAL) The apparatus of claim 12, wherein $V \cong 3.54\lambda$, wherein λ is a wavelength of a signal emanating from the DRA.

14. (CANCELED)

15. (CURRENTLY AMENDED) The apparatus of claim 1, wherein ~~the plurality of elements comprises~~:

~~a first row of elements extending in a first direction;~~

~~a second row of elements, parallel to the first row of elements;~~

the plurality of elements further comprises a third row of elements, parallel to the first row of elements and the second row of elements;

~~wherein~~ the second row of elements is disposed between the first row of elements and the third row of elements; and

~~wherein~~ the second row of elements is offset from the first row of elements in the first direction and the third row of elements is offset from the first row of elements in the first direction by a stagger distance S that varies as a non-linear function of a distance from the first row of elements extending in a second direction perpendicular to the first direction.

16. (ORIGINAL) The apparatus of claim 15, wherein the distance from the first row of elements is D and the function is proportional to D^2.

17. (ORIGINAL) The apparatus of claim 15, wherein:

the first direction is tilted from a North direction by a tilt angle.

18. (ORIGINAL) The apparatus of claim 17, wherein:

each element of the first row of elements is spaced apart from an adjacent element in the first row of elements by a distance V;

each element of the second row of elements is spaced apart from an adjacent element of the second row of elements by the distance V;

the second row of elements is spatially displaced from the first row of elements in the second direction by a distance H;

each element of the third row of elements is spaced apart from an adjacent element in the third row of elements by the distance V, and the third row of elements is spatially displaced from the second row of elements in the second direction by the distance H;

the tilt angle is approximately 6 degrees; and

$H \cong 5.4\lambda$ and $V \cong 3.54\lambda$, wherein λ is a wavelength of a signal emanating from the DRA.

19. (CURRENTLY AMENDED) A method of defining a direct radiating array (DRA), comprising the steps of:

defining a first row of elements extending in a first direction, each element of the first row of elements being spaced apart from an adjacent element in the first row of elements by a distance V; and

defining a second row of elements parallel to the first row of elements, each element of the second row of elements being spaced apart from an adjacent element of the second row of elements by the distance V, and the second row of elements spatially displaced from the first row of elements in a direction perpendicular to the first direction by a distance H;

wherein the second row of elements is offset from the first row of elements in the first direction by a stagger distance S such that ~~S/V is between zero and one~~ $S \neq \frac{1}{2} V$.

20. (ORIGINAL) The method of claim 19, further comprising the steps of:

selecting a direction of a DRA main lobe; and

computing H, V, and S from a relationship between the angular position of a plurality of grating lobes and the parameters H, V, S, and a wavelength λ of a signal emitted by the DRA.

21. (ORIGINAL) The method of claim 20, wherein the step of computing H, V, and S from a relationship between the angular position of a plurality of grating lobes and the parameters H, V, S, and a wavelength λ of a signal emitted by the DRA comprises the steps of:

defining a triangle formed by a centroid of a first element in the first row of elements, a centroid of a second element in the first row of elements adjacent the first element, and a centroid of a third element in the second row of elements, the third element adjacent the first element in the first row of elements and the second element in the first row of elements;

scaling the triangle by a scale factor $C = \frac{\lambda}{(V \bullet H)}$; and

determining the angular position of the grating lobes from the vertices of the scaled triangle.

22. (ORIGINAL) The method of claim 21, further comprising the step of rotating the scaled triangle by 90 degrees relative to the triangle.

23. (NEW) A direct radiating array (DRA), comprising:

a plurality of elements, collectively defining a DRA main lobe nearest a DRA boresight and a set of grating lobes nearest the DRA main lobe, the plurality of elements comprising:

a first row of elements extending in a first direction;

a second row of elements, parallel to the first row of elements;

a third row of elements, parallel to the first row of elements and the second row of elements;

wherein the second row of elements is disposed between the first row of elements and the third row of elements;

wherein the second row of elements is offset from the first row of elements in the first direction and the third row of elements is offset from the first row of elements in the first direction by a stagger distance S that varies as a non-linear function of a distance from the first row of elements extending in a second direction perpendicular to the first direction; and

wherein each of the grating lobes in the set of grating lobes is angularly displaced from the main lobe by a grating lobe angle that varies asymmetrically about the DRA main lobe.

24. (NEW) The apparatus of claim 23, wherein the distance from the first row of elements is D and the function is proportional to D^2.

25. (NEW) The apparatus of claim 23, wherein:

the first direction is tilted from a North direction by a tilt angle.

26. (NEW) The apparatus of claim 25, wherein:

each element of the first row of elements is spaced apart from an adjacent element in the first row of elements by a distance V;

each element of the second row of elements is spaced apart from an adjacent element of the second row of elements by the distance V;

the second row of elements is spatially displaced from the first row of elements in the second direction by a distance H;

each element of the third row of elements is spaced apart from an adjacent element in the third row of elements by the distance V, and the third row of elements is spatially displaced from the second row of elements in the second direction by the distance H;

the tilt angle is approximately 6 degrees; and

$H \cong 5.4\lambda$ and $V \cong 3.54\lambda$, wherein λ is a wavelength of a signal emanating from the DRA.